

UNITED STATES PATENT APPLICATION

for

A METHOD FOR PLACEMENT OF DATA FOR VISUALIZATION OF  
MULTIDIMENSIONAL DATA SETS USING MULTIPLE PIXEL BAR CHARTS

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FIELD OF INVENTION

5           The present invention relates to the field of information visualization.  
Specifically, the present invention relates to a method for placement of data for  
visualization of multidimensional data sets using multiple pixel bar charts.

BACKGROUND OF THE INVENTION

10           Pixel-oriented techniques allow for the presentation of large amounts of data  
having detailed information. To date, many visualization applications utilize of  
pixel-oriented techniques, such as the spiral technique, the recursive pattern technique  
and the pixel bar chart technique. The pixel bar chart technique is for presenting the  
data values directly rather than aggregating the data into a few data values. The  
15   approach is to represent each item by a single pixel in the bar chart.

          However, for an analysis of large volumes of data (e.g., large volumes of e-  
commerce transactions), the visualization of complex data is not sufficient. In order  
to optimally view and interpret the data it is necessary to optimally place the data. It  
20   is not obvious what an optimal placement of pixel should be. The optimal placement  
of data associated with visualization of massive multi-attribute data presents  
particular problems.

For one, in large data sets (e.g., dense data sets), limitations exist on pixel visualizations that are capable of showing large amounts of data on a value by value basis without aggregation. Current techniques do not offer optimal arrangement of data for detecting close relationships among the data. Also, current techniques do not offer an optimal arrangement of data for representing multiple attributes.

Current pixel visualization techniques also do not present data such that similar data records are placed close to each other. It is desirable to place similar records close to each other to fully appreciate the information presented by the data. For example, the detection of trends among data requires that similar records be placed in close proximity.

Furthermore, current pixel visualization techniques do not arrange data in a logical sequence. Currently techniques provide insufficient placement to resolve the locality and ordering constraints. As such, data is not categorized, and is more difficult to understand.

Also, limitations exist such that current pixel visualization techniques are restricted with respect to the number of the data attributes that may be used. Current techniques are typically limited to either four or six attributes. Since it is not uncommon to have data sets comprised of greater than 10 attributes, this limitation